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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,655	11/18/2003	Maria J. Lehmann	84954AEK	5360

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EXAMINER	
HON, SOW FUN	

ART UNIT	PAPER NUMBER
1772	

DATE MAILED: 12/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/715,655	LEHMANN ET AL.	
	Examiner	Art Unit	
	Sow-Fun Hon	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-30 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-30 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11/18/03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 1, 3-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear from the specification what the dimensions are of the "nanovoid" unless the particles have a median size of less than 200 nm as recited in original claim 2, in which case the voids in the particles would have dimensions in the nanometer range.

2. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites that the optical film is disposed as more than one antireflection layer. However, claim 1, upon which claim 10 depends, recites an optical film comprising a transparent support with an antireflection layer substantially conformed in shape to the surface underlying the layer. Hence the optical film is multi-layered, not just a single antireflection layer.

3. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. There is a missing component in the claim, qualified by the term "said", rendering said claim unclear as to which component does not diffuse any residual reflected light.

Claim Objections

4. Claim 19 is objected to because of the following informality: The term "polymeric" is misspelt as "polmeric". Appropriate correction is required.

5. Claim 23 is objected to because of the following informality: although the specification discloses that the additional compounds are added to specifically the anti-reflection layer (page 10, lines 27-32 and page 11, lines 1-5), the claim does not recite it. Appropriate correction or clarification is requested.

Claim Rejections - 35 USC § 103

6. Claims 1-5, 8-9, 12, 14-16, 18-19, 20-23, 25, 27-30 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yasuda et al. (US 5,919,55).

Regarding claim 1, Yasuda has an optical (anti-reflection) film comprising a transparent support (column 2, lines 20-25) with an antireflection layer (low refractive index layer with a high anti-reflection effect) (column 2, lines 25-35). The antireflection layer (low refractive index layer with a high anti-reflection effect) (column 2, lines 25-35) contains a binder polymer having dispersed polymer particles (column 2, lines 40-50) which contain "micro voids" (column 13, lines 20-30). The average particle size is 114 nm, which qualifies the "micro voids" to be nanovoids as defined by Applicant's specification (original claim 2 which recites a median particle size of less than 200 nm, and the voids are smaller than the particle).

Yasuda teaches that the nanovoids (micro voids) within the particles (column 5, lines 5-10) are in an amount of 3 to 50 volume % of the antireflection (low refractive index) layer (column 5, lines 10-15) which is within the claimed range of 64 % or less of the layer volume. The larger the volume % of the voids is, the greater the particle surface area would be, such that

the claimed particle surface area of greater than 50 m^2/gm is either inherent, or the result of routine experimentation by one of ordinary skill in the art at the time the invention was made.

Yasuda teaches that the antireflection layer (mixture of polymer particles and binder latex) is coated on the transparent support (triacetyl cellulose film) (column 14, lines 25-35). Hence the antireflection layer substantially conforms in shape to the surface underlying the layer (as coated).

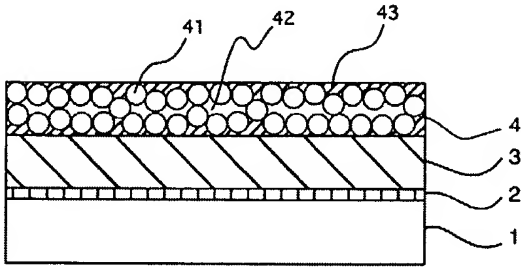
Regarding claim 2, Yasuda teaches a mean particle size of 5 to 200 nm (column 4, lines 20-25) which inherently overlaps the claimed median particle size range of less than 200 nm.

Regarding claim 3, Yasuda teaches that the nanovoids (micro voids) within the particles (column 5, lines 5-10) are in an amount of 3 to 50 volume % of the antireflection (low refractive index) layer (column 5, lines 10-15), whereby the volume of the voids inside the particles can be increased (column 5, lines 5-10) such that the claimed particle surface area of greater than 200 m^2/gm is either inherent, or the result of routine experimentation by one of ordinary skill in the art at the time the invention was made.

Regarding claim 4, Yasuda teaches that the polymer particles comprise a styrenic (styrene or its derivatives) monomer, an acrylic (ester) or methacrylic (ester) monomer (column 5, lines 38-48), or fluorine derivatives thereof (fluorinated (column 5, lines 15-25).

Regarding claim 5, Yasuda teaches that the particles are cross-linked at from 30 to 80 mole % (column 5, lines 1-10), which overlaps the claimed range of 50 mole % or greater, with a multifunctional monomer (having two or more ethylenically unsaturated groups) (column 5, lines 52-62).

Regarding claim 8, Yasuda in the picture below depicts the particles as comprising spherical beads. Although Yasuda does not teach that the particles have an irregular shape, as claimed in the Markush group, particles with an irregular shape are a matter of choice, which a person of ordinary skill in the art, at the time the invention was made, would have found obvious absent persuasive evidence that the particular shape of the particles is significant. See In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).



Regarding claim 9, Yasuda gives an example where the film is disposed as a single antireflection layer with a thickness of 100 nm, which is below the visible light wavelength range of 400 to 800 nm (column 14, lines 25-35).

Regarding claim 14, Yasuda teaches that the particles are incorporated in an antiglare layer (column 12, lines 28-38).

Regarding claims 15-16, Yasuda teaches binder polymers such as polyacrylic-based resin (acrylic resin) (column 10, lines 35-40).

Regarding claims 18-19, Yasuda teaches that the binder polymers are crosslinked to each other (claim 18) or the polymeric particles (claim 19) (column 7, lines 1-5).

Regarding claims 20-22, Yasuda teaches that the support is selected from cellulose triacetate (triacyl), cellulose diacetate (diacyl), acetate (acetyl) propionate (propionyl) cellulose,

polyester, polycarbonate, polyamide (column 10, lines 60-65), polyethylene terephthalate, polyolefins, polyethersulfone, polyether and polymethylpentene (column 11, lines 1-10).

Regarding claim 23, Yasuda teaches that the anti-reflection layer (low-refractive index layer) comprises a surfactant (surface active agent) as an emulsifier (dispersing agent) (column 6, lines 35-40).

Regarding claim 25, Yasuda teaches that the anti-reflection film is comprised in an LCD display (column 12, lines 54-60).

Regarding claim 27, Yasuda teaches that the transparent support of the optical film is attached to the display surface (column 12, lines 55-60), and hence is comprised by an optical element, window or cover plate.

Regarding claim 28, Yasuda teaches that repeating units, which have branches to be cross-linked, contribute to the formation of nanovoids (micro voids) inside the particles (column 5, lines 5-10). Even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985).* In the instant case, Yasuda teaches that the voiding of the particles is achieved by mixing hexafluoroisopropylmethacrylate monomer with divinylbenzene, dispersing the resultant mixture in distilled water (stirred, heated and mixed with sodium persulfate), and polymerizing the monomers to form the particles (polymerization reaction) (column 13, lines 5-15). Therefore although Yasuda does not specify whether the divinylbenzene functions as a porogen, the

product formed are particles with voids having dimensions in the nanometer range since the average particle size is 114 nm (column 13, lines 20-25).

Regarding claims 12, 29-30, Yasuda teaches that the anti-reflection film can be so treated for glare reduction (anti-glare function) by forming unevenness on the surface of the support (column 12, lines 28-38). Hence the underlying surface is rough for glare reduction (claim 30). On the other hand, the implication of the phrase "can be so treated" is that it can also not be treated. Hence the underlying surface can also be flat (claim 29) without an anti-glare function. Thus the anti-reflection film without an anti-glare function inherently does not diffuse any residual reflected light (claim 12), as defined by Applicant's specification (page 5, lines 25-30).

7. Claims 6-7, 10, 13, 17, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda et al.

Yasuda has been discussed above.

Regarding claim 6, Yasuda teaches that the particles are cross-linked at from 30 to 80 mole % (column 5, lines 1-10) with a multifunctional monomer (having two or more ethylenically unsaturated groups) (column 5, lines 52-62). Hence the claimed cross-linked mole % of 100 is the result of routine experimentation, by one of ordinary skill in the art at the time the invention was made.

Regarding claim 7, Yasuda teaches that the micro voids formed in the low refractive index layer by the particles superposed upon each other, surrounded by the particles (column 2, lines 22-27) degrade the mechanical strength of the layer (column 2, lines 34-38). Yasuda teaches, on the other hand, that the nanovoids (micro voids) within the particles (column 5, lines 5-10) are in an amount of 3 to 50 volume % of the antireflection (low refractive index) layer, and

can be increased by increasing the repeating units having a branched to be cross-linked (column 5, lines 10-15). An increase in the cross-link density is normally associated with an increase in the mechanical strength of the polymeric layer. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided the antireflection layer with nanovoids whereby greater than 97 volume % of the entrapped nanovoid is contained within the nanovoided polymer particles, instead of outside the particles, in order to obtain an antireflection layer with higher cross-link density, and hence higher mechanical strength.

Regarding claim 10, Yasuda teaches that the anti-reflection (low refractive index) layer can be formed by coating a coating solution on the transparent support (column 10, lines 45-50), and that two or more layers can be simultaneously coated in the support (column 10, lines 55-60). Therefore an optical film containing more than one anti-reflection layer is the result of routine experimentation, by one of ordinary skill in the art at the time the invention was made.

Regarding claim 13, Yasuda teaches that an antiglare layer of particles is provided on the surface of the support, or ontop of the surface of the anti-reflection film (column 12, lines 35-45). Therefore disposing the film on an underlying antiglare layer is the result of routine experimentation, by one of ordinary skill in the art at the time the invention was made. An antiglare layer ideally does inherently diffuse any residual reflected light, and is therefore the result of routine optimization by one of ordinary skill in the art at the time the invention was made.

Regarding claim 17, Yasuda teaches binder polymers such as polymethyl acrylate (column 10, lines 35-40), which is a homolog of polymethyl methacrylate. Therefore the substitution of polymethyl methacrylate for the polymethyl acrylate of Yasuda is the result of routine experimentation, by one of ordinary skill in the art at the time the invention was made.

Regarding claim 24, Yasuda teaches that an anti-fingerprint layer (for stain resistance such as resistance to formation of fingerprint) is disposed over the anti-reflection layer in the prior art (column 1, lines 30-33). The anti-reflection film of Yasuda is attached to the display surface (column 12, lines 55-65) bringing it into contact with the outside environment, including fingers. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have disposed an anti-fingerprint layer over the anti-reflection layer of Yasuda for that purpose.

8. Claims 11, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda as applied to claims 1-5, 8-9, 14-16, 18-19, 20-23, 25, 27-30 above, and further in view of Geaghan (US 6,395,863).

Yasuda has been discussed above.

Regarding claim 11, Yasuda teaches a hardcoat (column 3, lines 35-40), but fails to teach that it is disposed underlying the anti-reflection film.

Geaghan teaches that a hardcoat provides protection against conditions such as vacuum and heat encountered during processing of other components of the display (column 3, lines 50-60).

Therefore disposing the anti-reflection film of Yasuda on an underlying hardcoat layer is the result of routine experimentation, by one of ordinary skill in the art at the time the invention was made, in order to obtain protection for the anti-reflection film, as taught by Geaghan.

Regarding claim 26, Yasuda teaches displays (column 12, lines 55-60), but fails to teach a touch screen display.

Geaghan teaches a touch screen display (column 1, lines 15-25) provided with an anti-reflection film comprised of multi-layers of metal oxide (column 6, lines 45-55).

Yasuda teaches that anti-reflection films made of metal oxide layers requires a complicated process necessitating precise control of each layer (column 1, lines 20-30).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used the anti-reflection film of Yasuda as the anti-reflection film in the touch screen display of Geaghan, in order to obtain a touch screen display with an anti-reflective film manufactured by a much simpler process, as taught by Yasuda.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S Hon.

Sow-Fun Hon

11/07/04